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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
11/437,110	05/18/2006	Paul Anthony Mattiola	06747ZP USA	9731

23543 7590 03/08/2017

AIR PRODUCTS AND CHEMICALS, INC.
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EXAMINER	
BORISSOV, IGOR N	

ART UNIT	PAPER NUMBER
3649	

MAIL DATE	DELIVERY MODE
03/08/2017	PAPER

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UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

Ex parte PAUL ANTHONY MATTIOLA,
VLADIMIR YLIY GERSHTEIN, and
KAREN MARIE CAMPBELL

Appeal 2014-006739
Application 11/437,110[1]
Technology Center 3600

Before HUBERT C. LORIN, AMEE A. SHAH and
ROBERT J. SILVERMAN, Administrative Patent Judges.

LORIN, *Administrative Patent Judge*.

DECISION ON APPEAL

STATEMENT OF THE CASE

Paul Anthony Mattiola, et al. (Appellants) seek our review under 35 U.S.C. § 134 of the final rejection of claims 1, 2, 9–11, 13–17, 19, and 22–32. We have jurisdiction under 35 U.S.C. § 6(b) (2002).

SUMMARY OF DECISION

We REVERSE.

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[1] The Appellants identify Air Products and Chemicals, Inc. as the real party in interest. App. Br. 2.

THE INVENTION

Claim 1, reproduced below, is illustrative of the subject matter on appeal.

1. A method for dispensing a product to a user, the method comprising the steps of:

providing fresh, fresh being a carrier releasably incorporating a product;

separating product from the fresh thereby converting the fresh into spent;

providing a first user, the first user comprising:

at least one storage vessel adapted for receiving and storing fresh; and

at least one storage vessel adapted for receiving and storing spent collected from the first user;

separating product from the fresh;

collecting spent from the at least one storage vessel;

providing and using a system for measuring the quantity of product in the spent,

providing and using a system for measuring the presence of at least one chemical or physical property of the collected spent;

comparing the at least one detected chemical or physical property of the collected spent with at least one predetermined criteria in order to determine whether the spent is contaminated;

collecting uncontaminated spent and,

regenerating uncontaminated collected spent by incorporating product into the uncontaminated collected spent.

THE REJECTIONS

The Examiner relies upon the following as evidence of unpatentability:

Edlund	US 2004/0081867 A1	Apr. 29, 2004
Kimbara	US 6,802,875 B1	Oct. 12, 2004
Redmond	US 7,169,489 B2	Jan. 30, 2007
Speranza	US 7,550,113 B2	Jun. 23, 2009
Tsai	WO 01/99222 A2	Dec. 27, 2001

The following rejections are before us for review:

1. Claims 1, 2, 9–11, 13–17, 19, and 22–32 are rejected under 35 U.S.C. §101 as being directed to non-statutory subject matter.[2]
2. Claims 1, 2, 9–11, 13–17, 19, 22–30, and 32 are rejected under 35 U.S.C. §103(a) as being unpatentable over Kimbara, Redmond, Edlund, and Speranza.[3]
3. Claim 31 is rejected under 35 U.S.C. §103(a) as being unpatentable over Kimbara, Redmond, Edlund, Speranza, and Tsai.

ISSUES

Did the Examiner err in rejecting claims 1, 2, 9–11, 13–17, 19, and 22–32 under 35 U.S.C. §101 as being directed to non-statutory subject matter?

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[2] The statement of the rejection (Final Act. 2) includes claim 21 but claim 21 was cancelled. *See* App. Br. 2.
[3] The statement of the rejection (Final Act. 3) includes claim 21 but claim 21 was cancelled. *See* App. Br. 2.

Did the Examiner err in rejecting claims 1, 2, 9–11, 13–17, 19, 22–30, and 32 under 35 U.S.C. §103(a) as being unpatentable over Kimbara, Redmond, Edlund, and Speranza?

Did the Examiner err in rejecting claim 31 under 35 U.S.C. §103(a) as being unpatentable over Kimbara, Redmond, Edlund, Speranza, and Tsai?

ANALYSIS

The rejection of claims 1, 2, 9–11, 13–17, 19, and 22–32 under 35 U.S.C. §101 as being directed to non-statutory subject matter.

Prosecution of this application occurred before the *Alice* [*Alice Corp. Pty. Ltd. v. CLS Bank International*, 134 S. Ct. 2347 (2014)] decision issued. The Examiner correctly analyzed the subject matter of claim 1 in light of the guidelines then in effect; that is, the Examiner considered, as a factor weighing for and against patent eligibility, whether the claimed subject matter is tied to a particular machine or transforms a particular article into a different state or thing. *See* Non-Final Rej. 3. In that regard, the Examiner found "no recitation of a ... transformation." We disagree.

The subject matter of independent claim 1 includes the steps of "separating product from the fresh thereby converting the fresh into spent" and "regenerating uncontaminated collected spent by incorporating product into the uncontaminated collected spent." One of ordinary skill in the art reading these steps in light of the Specification (*see, e.g.*, para. 16: "**'Spent'** - the carrier when depleted or partially depleted of product or product elements") would reasonably broadly construe them as steps in a chemical process whereby the product-fresh combination and uncontaminated

collected spent are transformed into product and spent and regenerated uncontaminated collected spent, respectively.

> A claimed process is patent-eligible if it transforms an article into a different state or thing. This transformation must be central to the purpose of the claimed process. But the main aspect of the transformation test that requires clarification here is what sorts of things constitute "articles" such that their transformation is sufficient to impart patent-eligibility under § 101. It is virtually self-evident that a process for a chemical or physical transformation of physical objects or substances is patent-eligible subject matter. As the Supreme Court stated in *Benson*:
>
> > [T]he arts of tanning, dyeing, making waterproof cloth, vulcanizing India rubber, smelting ores ... are instances, however, where the use of chemical substances or physical acts, such as temperature control, changes articles or materials. The chemical process or the physical acts which transform the raw material are, however, sufficiently definite to confine the patent monopoly within rather definite bounds.
>
> 409 U.S. at 70, 93 S. Ct. 253 (*quoting Corning v. Burden*, 56 U.S. (15 How.) 252, 267–68, 14 L. Ed. 683 (1854)); *see also Diehr*, 450 U.S. at 184, 101 S. Ct. 1048 (process of curing rubber); *Tilghman*, 102 U.S. at 729 (process of reducing fats into constituent acids and glycerine).

In re Bilski, 545 F.3d 943, 962 (Fed. Cir. 2008).

The Examiner states that "the recited steps of 'providing',' 'separating,' 'collecting,' 'comparing' and 'regenerating' could be understood as steps conducted mentally or insignificant post-solution activity, like data gathering, change in position or location . . ." Ans. 3. However, we are unable to see how one can mentally, for example, "regenerat[e] uncontaminated collected spent by incorporating product into the uncontaminated collected spent" (claim 1). Nor do we see said step as insignificant given its necessity for the process to accomplish one of its

goals; that is, to solve a problem with contaminated spent (*see* Spec., e.g., para 9).

The Examiner also states that

> the "regenerating" step could be understood as merely mixing a new product with the carrier. Therefore, there is not [sic] chemical transformation is required (e.g. by braking hydrogen bonds of the organic chemical), and "regenerating" of dehydrogenated derivative of the organic chemical could be understood in view of Specification as merely physically saturating, or mixing two materials without any chemical reaction resulted from said mixing.

Ans. 3. However, as explained in *Bilski* (see the passage reproduced above), *physical* transformation of physical objects or substances is patent-eligible subject matter. Accordingly, physically saturating or mixing *per se* are not necessarily patent-ineligible.

For the foregoing reasons, the Examiner did not make out a prima facie case of patent-ineligibility for claim 1 in the first instance under the law and guidance in effect at the time this application was prosecuted. The Examiner did not analyze the substance of any other claim. Accordingly, the Examiner also did not make out a prima facie case of patent-ineligibility for claim 2, 9–11, 13–17, 19, and 22–32.

The rejection is not sustained.

The rejection of claims 1, 2, 9–11, 13–17, 19, 22–30, and 32 under 35 U.S.C. §103(a) as being unpatentable over Kimbara, Redmond, Edlund and Speranza.

Claim 1, and thus also claims 2, 9–11, 13–15, 24, 25, 28, 28, and 32 that depend from claim 1, include the limitation "comparing the at least one detected chemical or physical property of the collected spent with at least

one predetermined criteria in order to determine whether the spent is contaminated." The Examiner appears to find this limitation disclosed in Edlund and Speranza.

Regarding Edlund, the Examiner found said limitation disclosed at paras. 31 and 32, reproduced below. Non-Final Rej. 6.

> [0031] As an example, the FCS communication subsystem may transmit to RSS 30 communication signals 64 containing data corresponding to one or more operating parameters that may be used to model or otherwise define the operating state, or a portion thereof, of the fuel cell system. As used herein, "operating state" is used to describe the overall operation (or lack thereof) of the fuel cell system, or a portion thereof, and the many aspects of such operation that may be characterized by discrete operating parameters. Each of these operating parameters may be derived from one or more measured value, set condition, analyzed data, etc. For example, an operating parameter may describe the energy-producing (operating) state of the fuel cell system (on, off, standby, warm-up, cool-down, etc.). Other operating parameters may be used to describe the temperature, pressure, purity, efficiency, battery reserve, etc. of various portions of the fuel cell system. Some operating parameters may directly reflect a measured value; for instance, a temperature parameter may model the measured temperature of a portion of the fuel cell stack. Other operating parameters may be derived from one or more measured values. For example, a measured pressure and a measured flow rate may be used to calculate a contamination parameter, or a battery reserve measurement and an average load measurement may be used to calculate a remaining duration of operation parameter. In general, different types of operating parameters may be measured, calculated, set, etc. Plural operating parameters may collectively be used to either completely or partially model an operating state of the fuel cell system, and such parameters may be transmitted via the FCS communication subsystem. As used herein, the operating parameters of a fuel cell system may include one or more operating parameters relating to the operating environment in which the fuel cell system is

> used, such as the temperature of the environment and/or the load being applied to the fuel cell system.
>
> [0032] When the RSS is adapted to receive communication signals containing measured data from a fuel cell system 12 within its network, the fuel cell system will typically include a measurement subsystem 44 that is configured to measure or otherwise determine operating parameters that may be transmitted via the FCS communication subsystem. The measurement subsystem is typically configured to take various measurements such as temperatures, pressures, electric currents, concentrations, flow rates, fuel and oxidant levels, etc. Accordingly, the measurement subsystem may include one or more suitable measurement devices, or sensor assemblies, adapted to measure, or otherwise acquire, operating parameters of the fuel cell system. For example, to measure temperatures, the measurement subsystem may include one or more thermistor, thermometer, thermocouple, or other temperature-measuring devices. Similarly, a Bourdon gauge, manometer, pressure transducer or other pressure gauge may be used to measure pressures, and voltmeters, ammeters, and ohmmeters may be used to respectively measure potential differences, electric current magnitudes, and electrical resistances. Other measurement devices may be used for appropriate measurements. The measurement subsystem may continually measure predetermined operating parameters and/or may sample measurements according to a configurable schedule. Measurements may also be taken in response to predefined events and/or in response to user commands, which may be remotely transmitted to the fuel cell system. As described herein, such measurements may be compiled and/or transmitted for compilation.

We do not see, in these cited Edlund passages directed to a general discussion of various possible communication and measuring systems, any disclosure of said limitation. There is no disclosure of comparing a detected chemical or physical property of a collected spent as claimed.

We find likewise for Speranza. The Examiner found said limitation disclosed at col. 6, lines 19–23, reproduced below. Non-Final Rej. 6.

> Method 100 then proceeds to query block 106 where the parameter H_{pure} is compared with the desired purity level H_{pref}. If the query returns a negative response, the method 100 proceeds on to block 108 which opens the valve 36 allowing hydrogen gas to flow from the hydrogen generator 24 towards the tank 40.

This passage describes, inter alia, comparing hydrogen purity with a desired level of purity. But the limitation calls for "comparing a detected chemical or physical property *of the collected spent* with at least one predetermined criteria in order to determine whether the spent is contaminated" (claim 1). According to claim 1, collected spent is converted fresh collected from a storage vessel; that is, the collected spent is the result of separating product from a carrier releasably incorporating a product (fresh). The Examiner does not explain and we do not see how one of ordinary skill would have been led to compare a detected chemical or physical property of collected spent as claimed given said Speranza disclosure of comparing hydrogen purity with a desired level of purity.

For the foregoing reasons, a prima facie case of obviousness has not been made out in the first instance by a preponderance of the evidence.

Claim 16, and thus, also claims 17, 19, 22, 23, 26, 27, and 30 that depend from claim 16, include, similar to claim 1, the limitation "comparing the at least one detected chemical or physical property of the collected spent with at least one predetermined criteria [thereby] determining whether the [collected] spent is contaminated." The Examiner found this limitation disclosed in the same passages of Edlund and Speranza discussed above. For the same reasons, a prima facie case of obviousness has not been made out for the subject matter of claim 16 in the first instance by a preponderance of the evidence.

The rejection of claim 31 under 35 U.S.C. §103(a) as being unpatentable over Kimbara, Redmond, Edlund, Speranza, and Tsai.

Claim 31 depends from claim 1 and its rejection is not sustained for the reasons given in not sustaining the rejection of claim 1.

CONCLUSIONS

The rejection of claims 1, 2, 9–11, 13–17, 19, and 22–32 under 35 U.S.C. §101 as being directed to non-statutory subject matter is not sustained.

The rejection of claims 1, 2, 9–11, 13–17, 19, 22–30, and 32 under 35 U.S.C. §103(a) as being unpatentable over Kimbara, Redmond, Edlund and Speranza is not sustained.

The rejection of claim 31 under 35 U.S.C. §103(a) as being unpatentable over Kimbara, Redmond, Edlund, Speranza, and Tsai is not sustained.

DECISION

The decision of the Examiner to reject claims 1, 2, 9–11, 13–17, 19, and 22–32 is reversed.

REVERSED